

SAPROSCINCUS ORIARUS, A NEW SCINCID LIZARD (LACERTILIA: SCINCIDAE)
FROM THE NORTH COAST OF NEW SOUTH WALES

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Saproscincus oriarus is described from 10 specimens from 5 scattered areas on the north coast of New South Wales. The species is small and most similar to *Saproscincus mustelinus*. It is characterised by a fine white midlateral stripe in both sexes; this character is otherwise present within *Saproscincus* in low frequencies only in females of *S. challengerii*, *S. rosei* and *S. spectabilis*. □ *Scincidae*, *Saproscincus*, *New South Wales, coastal*.

Ross A. Sadlier, Australian Museum, 6 College Street, Sydney 2000, Australia; 17 April 1998.

Over the past decade, specimens of a small undescribed species of skink have been deposited in the Herpetology collection of the Australian Museum. These have come from various sources, the majority being collected as voucher specimens during the course of fauna survey work on the far north coast of NSW. The species has been collected from the Myall Lakes area in the south to Byron Bay in the north, in coastal or near coastal habitats, including both artificial and disturbed environments.

The conservation status of *S. oriarus* is unclear. It has an apparently broad distribution but is known from relatively few individuals at any location. Its occurrence in areas altered by human activity indicates that it can persist in disturbed habitat. However, the scarcity of records in one of the most developed regions of Australia also indicates that it may be limited in distribution at a local scale by factors other than habitat type.

Specimens are lodged in the Australian Museum, Sydney (AMS).

MATERIALS AND METHODS

MEASUREMENTS. The following characters were scored for each specimen where possible: snout to vent length (SVL) - measured from tip of snout to caudal edge of anal scales; axilla to groin distance - measured from middle of base of fore limb to middle of base of hindlimb; forelimb to snout length - measured from tip of snout to middle of base of forelimb; hindlimb length - measured from middle of base of hindlimb to tip of fourth toe including nail; tail length (TL) - measured from posterior edge of anal scales to tip of tail, on complete original tails only as determined by x-rays. Body measurements are expressed

as percentages of snout to vent length (SVL) in the taxon account.

SCALATION. Head scalation generally follows Taylor (1935), except for the shields bordering the anterior and lower edge of the eye which follow Sadlier (1986: Fig. 2); midbody scale rows (MBR) = number of longitudinal scale rows around body counted midway between axilla and groin; paravertebral scales (DSR) = number of scales in a paravertebral row from first scale posterior to parietal scale to last scale anterior to level of vent opening; fourth finger (4FS) and toe scales (4TS) = number of dorsal scales on fourth digit of hand and foot, distal scale contains claw, basal scale of fourth finger and toe lies adjacent to basal scale of third finger and toe respectively; fourth finger (4FL) and toe lamellae (4TL) - number of ventral scales on fourth digit of hand and foot, distal scale contains claw and basal scale is last largely undivided scale at a point level with intersection of third and fourth digits. Bilaterally scoreable scalation characters were scored on both sides and the mean value used in calculating statistics.

OSTEOLOGY. Specimens were X-rayed to assess phalangeal formula, and number of presacral and postsacral vertebrae.

Saproscincus oriarus sp.nov.

ETYMOLOGY. Latin *oriarus*, of the coast.

MATERIAL. HOLOTYPE: AMSR146851 Byron Bay, 3.5km N town centre (Byron Bay Holiday villages), NSW 28°37'S 153°35'E collected R. Sadlier & P. Rowland 11/2/1995. **PARATYPES:** AMSR146722, 146827 and 146747, all same general location and collectors as holotype (146722 site 5 3/2/1995; 146827, site 11 8/2/1995; 146747 site 3 6/2/1995); AMSR146634 Yuraygir NP, Blue Lake S Station Ck



FIG. 1. *Saproscincus orarius* from Byron Bay.

(area 89) NSW 29°57'S 153°14'E, 20/10/1994; AMSR144592 Yuraygir NP, N Wooli (NRAC 80 CG) NSW 29°49'S 153°16'E, 21/5/1994; AMSR150565 Coffs Harbour, Boulwood St NSW 30°17'S 153°07'E, 25/11/1996; AMSR150941 Sawtell, Balydon NSW 30°21'S 153°04'E collected 4/4/1997; R132477 Limeburners Creek Nature Reserve, Big Hill rest/camping area NSW 31°16'S 152°58'E, 23/4/1989; AMSR146999 Myall Lakes area, Smiths Lake Field Station (vicinity) NSW 32°23'S 152°29'E.

DIAGNOSIS. The species described here is placed in the genus *Saproscincus* as defined by Greer (1989) in having six upper labials and a white spot to the posterior base of the thigh.

Saproscincus orarius is distinguished from the other members of the genus by the following combination of characters: adult size moderately small 34-43mm; premaxillary teeth 11; post-sacral vertebrae 54; nuchal scales meet behind interparietal; supraciliaries usually 6; scales on top of fourth finger 9-11; lamellae beneath fourth finger 13-16; scales on top of fourth toe 11-13; lamellae beneath fourth toe 18-22; lateral surface of head and body with a fine white midlateral stripe; dark markings on the ventral surface (when present) arranged in regular longitudinal rows.

DESCRIPTION. Based on 9 adults 34-43mm SVL (the single juvenile AMSR146722 is not

included in the description of scalation or measurements, and AMSR146634 is used only in scalation description due to poor preservation).

Measurements. (Adults only) Maximum SVL 43mm; distance from axilla to groin 53.7-57.9% SVL (mean = 55.6%, n = 7); distance from forelimb to snout 38.4-41.5% SVL (mean = 40.0%, n = 7); hindlimb length 34.2-39.0% SVL (mean = 36.9%, n = 6); tail approximately 1.5 × longer than body.

Scalation. Frontonasal broader than long; prefrontals moderately separated; frontal longer than wide, contacting first and second of four supraoculars; frontoparietals distinct; interparietal distinct, parietal eye spot present; parietals contact behind interparietal, each bordered by a nuchal scale and upper secondary temporal scale; primary temporal single; upper secondary temporal single, overlaps lower secondary temporal; lower secondary temporal single; tertiary temporal single; postlabials two.

Nasals moderately large, widely separated; loreals two; upper and lower preocular present; anterior suboculars one; supraciliaries usually six (75%), occasionally seven; upper labials six, fourth contacting the lower eyelid; lower labials six; postmental contacting first and second lower labial; chinshields three, first pair in broad con-

TABLE 1. Comparative table of measurements and meristics for *S. oriarus*, *S. challengerii*, *S. rosei*, *S. spectabilis* and *S. mustelinus*. Data for *S. challengerii*, *S. rosei*, *S. spectabilis* from Sadlier et. al., 1993.

	<i>S. oriarus</i>	<i>S. challengerii</i>	<i>S. rosei</i>	<i>S. spectabilis</i>	<i>S. mustelinus</i> southern	<i>S. mustelinus</i> northern
Maximum SVL	43	57	64	59	58	55
TL (%SVL) range		137-168	137-192	139-192	175-202	152-191
mean	ca. 150	155.8	168.1	165.0	184.5	172.6
n	1	27	31	28	3	4
Sup. range	6-7	6-7	5-8	6-8	6-7	6-7
mode	6	6	7	7	6	6
MBR range	22-24	23-26	22-26	22-28	22-24	22-24
mean±sd	22.7±1.00	24.6±1.0	24.1±0.9	22.7±0.9	22.8±0.98	22.7±0.9
n	6	63	100	59	19	44
DSR range	59-63	54-63	55-67	54-61	56-62	58-65
mean±sd	61.0±1.32	57.6±1.6	58.8±2.2	57.9±1.7	59.8±1.45	61.0±1.67
n	6	63	101	58	19	44
4FS range	9-11	9-11	9-11	9-11	9-11	7-10
mean±sd	9.9±0.82	10.0±0.3	9.7±0.8	10.2±0.4	8.7±0.53	8.1±0.40
n	6	63	100	57	19	44
4FL range	13-16	15-19	14-18	16-21	10-14	9-12
mean±sd	14.2±0.80	17.3±0.9	15.3±0.9	17.9±1.0	12.7±0.73	10.9±0.68
n	6	63	100	57	19	44
4TS range	11-13	11-13	10-14	10-14	11-12	9-12
mean±sd	12.0±0.65	11.2±0.4	11.2±0.6	12.3±0.9	11.2±0.34	10.7±0.52
n	6	63	100	58	16	44
4TL range	18-22	22-27	17-24	22-28	18-22	14-19
mean±sd	19.9±1.1	24.3±1.0	21.0±1.2	24.8±1.4	19.8±0.62	16.8±1.14
n	6	63	100	63	19	44
Presacral range	28-29	27-29	27-29	26-28	28-30	29-30
mean±sd	28.3±0.52	27.1±0.3	27.7±0.7	27.0±0.3	29.1±0.43	29.3±0.48
n	6	16	58	46	17	42
Postsacral range	54	45-48	46-53	48-53	50-52	45-51
mean±sd		46.8±1.1	49.6±2.3	50.3±1.2	51.0±1.0	48.0±2.58
n	1	12	20	31	3	4

tact; lower eyelid with an obvious, centrally located semi-transparent disc; ear opening moderately large, with small acute lobules anteriorly and a number of small rounded lobules on posterior and lower edges.

Midbody scale rows 22-24 (mean = 22.7, sd = 1.00, n = 9); paravertebral scales 59-63 (mean = 61.0, sd = 1.32, n = 9); scales on top of fourth finger 9-11 (mean = 9.9, sd = 0.82, n = 8); lamellae beneath fourth finger 13-16 (mean = 14.2, sd = 0.80, n = 8); scales on top of fourth toe 11-13 (mean = 12.0, sd = 0.65, n = 8); lamellae beneath fourth toe 18-22 (mean = 19.9, sd = 1.10, n = 8).

Osteology. Presacral vertebrae 28 (n = 4) - 29 (n = 2); postsacral vertebrae 54 (n = 1); phalangeal

formula for manus and pes 2.3.4.5.3 and 2.3.4.5.4 respectively.

Colour and Pattern. Holotype and three paratypes from Byron Bay with mid brown dorsal surface, unmarked except for dark longitudinal streaks on scale row three (dorsolateral margin) before and after the fore- and hindlimbs. Lateral surface with a pale, dark-edged, mid lateral stripe (broken posteriorly) from behind nare to base of the hind limb, running under the eye, through the ear opening, and above the forelimb; upper lateral surface of body mid-brown, similar to dorsal colour; lower lateral surface mid to light-brown approaching the venter. Fore- and hindlimbs with dark median streaks to each scale giving the ap-



FIG. 2. Records of *Saproscincus oriarus* (closed square) in NSW.

pearance of alternate light and dark brown stripes; anteriormost pale stripe of the hindlimb more or less continuous with pale mid lateral stripe. Tail markedly two-toned, dorsal surface lighter in colour than adjoining dorsal surface of body, lateral surface of tail same as body but with a prominent, pale, dark-edged stripe bordering the margin of the lateral and ventral surfaces. Ventral surface pale; scales of ventrolateral edge with a brown median streak forming a near continuous stripe down the body between the fore- and hindlimbs; underside of hindlimbs and enlarged median scales of tail with similar dark streaks.

The remaining specimens from further S show some variation with regard to intensity of colour, definition of the dorsal and lateral surfaces of the body, and degree of dark marking on the ventral surface of the body.

Two specimens (AMSR146634 & 144592) from two different locations at Yuraygir NP exhibit the extremes of variation in intensity of coloration. AMSR146634 is pale brown on the dorsal and lateral surfaces of the body but has a distinct

narrow, black, dorsolateral stripe on scale row 3, and the ventral surface nearly devoid of dark markings. AMSR144592 is dark brown on the dorsal surface and nearly black on the upper lateral surface of the body, and ventral scales of the body all have a dark median streak to giving the appearance of several parallel rows of dark stripes.

Two specimens from Coffs Harbour (AMSR-150565 & 150941), and one from Smiths Lake (146999), have well defined dark lateral and lighter dorsal surfaces, and moderate to extensive dark markings to the ventral surface (similar to 144592). The specimen from Crescent Head is similar in pattern but overall lighter in tone, and has less extensive dark markings on the ventral surface (similar to the Byron Bay specimens).

HABITAT AND DISTRIBUTION. Known from Byron Bay in the far NE of NSW to the Smiths Lakes area approximately 420km south. Habitat notes indicate the species prefers well vegetated areas along the central and northern coastal plain. The series of four specimens pitfall trapped on the coastal plain just N of Byron Bay represent 3 different habitat types: swamp sclerophyll forest dominated by broad-leaved paperbark, shrubs and ferns; swamp sclerophyll woodland/shrubland; and grassland that replaced native vegetation following clearing. The specimen from Limeburners Ck Nature Reserve was collected in an area that was, and is now adjacent to, littoral rainforest and *Melaleuca* swamp and the specimen from Smiths Lake field station was from coastal forest.

Data associated with several specimens indicate the species occurs in disturbed habitats. One specimen from Byron Bay was collected in an extensive area of mown grass, the specimen from Coffs Harbour from a suburban allotment, and the specimen from Limeburners Ck Nature Reserve 'in a pair of female underpants in tent habitat' located on grassland that was formerly littoral rainforest and *Melaleuca* swamp (H. Hines field notes).

Saproscincus oriarus appears to be a secretive species. All specimens collected from Byron Bay were taken from pit-fall traps between late afternoon and early morning.

One specimen collected in Oct. 1994 has 3 shelled eggs.

COMPARISON WITH OTHER SPECIES. Within *Saproscincus* Greer (1989) defined a lineage of three species *S. basiliscus*, *S. czechurae* and *S. tetradactyla*, all of which occur in closed forest habitat of mideast and NE QLD. This group of

species share the derived character states of small size, elevated number of premaxillary teeth (13 or more vs 11), and a unique arrangement of the nuchal scales. The second and third characters will readily distinguish these species from *S. oriarus*. A further two species similar to *S. basiliscus* have been described (Couper & Keim, 1998 [this volume]). Both are members of this lineage.

The remaining species *S. challengerii*, *S. rosei*, *S. spectabilis*, *S. mustelinus* and *S. oriarus* form a primitive assemblage within *Saproscincus*. *S. challengerii*, *S. rosei* and *S. spectabilis* are all moderately large diurnal species occurring in closed forest habitat of the coast and ranges of central and northern NSW and SE Qld. *S. mustelinus* is a crepuscular species that generally occurs in woodland rather than closed forest habitat. It is widely distributed in near coastal and highland areas of SE Australia but is only found in the highlands N of the Hunter R. in NSW. It is suggested these northern *S. mustelinus* are distinct from allopatric populations to the south (Wells & Wellington, 1985). *S. oriarus* also appears to be crepuscular in habits, but occurs in coastal or near coastal habitats N of the Hunter Valley and as such, is allopatric in distribution to both northern and southern populations of *S. mustelinus*.

In morphology *S. oriarus* can be distinguished from these remaining members of the genus as follows:

1) from *S. challengerii* in having fewer lamellae beneath the fourth finger (13-16 vs 15-19) and fourth toe (18-22 vs 22-27) and in having the dark markings on the ventral surface (when present) in regular longitudinal rows vs scattered;

2) from *S. spectabilis* by having fewer superciliaries (usually 6 vs usually 7), and fewer lamellae beneath the fourth finger (13-16 vs 16-21) and fourth toe (18-22 vs 22-28);

3) from *S. rosei* in having fewer supraciliaries (usually 6 vs usually 7), and from southern populations of *S. rosei* in also having the dark markings on the ventral surface (where present) arranged in regular longitudinal rows vs scattered.

4) from the southern populations of *S. mustelinus* in having more finger scales (9-11 vs 8-10), more finger lamellae (13-16 vs 10-14), and presence of a fine midlateral stripe;

5) from northern populations of *S. mustelinus* in having more finger scales (9-11 vs 7-9), more finger lamellae (13-16 vs 9-13), more toe scales (11-13 vs 9-12), more toe lamellae (18-22 vs 14-20); and presence of a fine midlateral stripe.

Some female *S. challengerii* (Sadlier, 1993), *S. rosei* (Sadlier, 1993: figs 16, 18 & 19), and *S. spectabilis* (Sadlier, 1993: fig. 11) have a white midlateral stripe and two-toned body colour. Juvenile and subadult females of these species with a white midlateral stripe could be confused with similar sized *S. oriarus*. *S. oriarus* and *S. rosei* are regionally sympatric in the Coffs Harbour area on the mid north coast.

ADDITIONAL MATERIAL. *S. mustelinus* southern group: AMSR148294-299 Mt Wilson area, Waterfall Rd., 33°29'S 150°25'E NSW; AMSR148300 Mt Wilson, Waterfall Ck area, 33°30'S 150°23'E NSW; AMSR135309-310, 138135-146 Charlestown, Newcastle suburb 32°58'S 151°41'E NSW. *S. mustelinus* northern group: AMSR147088-91 Stewart's Brook SF, Gologlie picnic area 31°55'S 151°20'E NSW; AMSR148227-230 Riamukka SF, Hell Hole rd. near track to Grundy Fire Tower 31°20'S 151°39'E NSW; R148231-257 Riamukka SF, nr Grundy Fire Tower 31°20'S 151°39'E NSW; AMSR138212-215, 138232-242 Beech Lookout, Styx R. SF 30°31'S 152°21'E NSW.

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